A right way.

Course goals and objectives:

Participant will be able to safely mow and trim a yard using a lawnmower and trimming devices.

Syllabus or Course outline: 1 hour

A – Lawn mowing

The steps and procedures to safely and neatly mow a standard lawn and successfully complete the course. 5 minutes

1 – Safety and Preparation 10 minutes

Using and maintaining lawn care equipment and lawn mowers. Preventing injuries. Cleaning area to be mowed.

2 – Lawns 10 minutes

Size, shape, turf length, kinds of grass, landscaping, weeds and the effect of each on lawn mowing.

3 - Mowers 10 minutes

Push mowers, gasoline, electric and manual, riding mowers and small tractors. Using and maintaining the equipment and blade sharpening

4 – Trimmers 10 minutes

Manual and motorized electric and gasoline trimmers. Using, maintaining and repairing trimmers for proper lawn finishing.

5 – Clean-up 10 minutes

Cleaning mowing equipment, finish raking and disposal of clippings.

B - Conclusion 5 minutes

Questions of the participants to evaluate successful completion of the course.

Method of attendance verification: A roster of all participants, checked by identification by the course monitor will be circulated throughout the course offering. Participants may not receive course credit if they do not attend the approved course in its' entirety. Sample of roster format attached.

Method of student record maintenance: Information needed for both the required sponsoring organization annual report and licensee certificate of course completion for each course offering will be maintained for at least 5 years.

List of other states that have approved the course and the credits granted by each state: AL-1, MO-2, NE-1, UT-1. Approval is pending in WI, CA and WY.

Instructors: Wesley Weedwacker. Names of additional instructors of Montana course offerings will be provided with notice of additional course offering, if needed.

A wrong way: Not enough detail

Course goals and Objectives: Participant will complete the course.

Syllabus or course outline:

A – Lawn mowing 5 minutes

1 – Safety and Preparation 10 minutes
2 – Lawns 10 minutes
3 – Mowers 10 minutes
4 - Trimmers 10 minutes
5 – Clean-up 10 minutes

B - Conclusion 5 minutes

Method of Attendance verification: roster

Method of Attendance verification: Kept in office filing cabinet.

List of other states that have approved the course and the credits granted by each state: Maryland and others.

Instructor: Bernard Bluegrass (Maryland offerings)

A wrong way: too much detail

Course Goals and Objectives:

Participant will completely understand all of the elements of mowing, trimming and maintaining a pleasant lawn at an appropriate lawn height. Participant will be able to discriminate between various lawn mowing equipment, trimmers and the uses of each. Participant will be able to discuss the methods of equipment maintenance and the need for ongoing lawn care.

Syllabus or course outlines:

A – Lawn mowing 5 minutes

Maintaining a rough lawn requires only occasional cutting with a suitable machine, or grazing by animals. Maintaining higher quality lawns may require special maintenance procedures:

- Mowing regularly with a sharp blade at an even height.
- Not mowing when lawn is wet.
- Not removing more than 30% to 40% of the plant tissue.
- Alternating the direction of cut from previous mowing.
- Scarifying and raking, to remove dead grass and prevent tufting.
- Rolling, (to encourage tillering (branching of grass plants) and to level the ground).
- Top dressing with sand, soil or other material.
- Spiking or aeration (to relieve compaction of the soil).
- Additional watering.
- Fertilizing application.
- Organic or synthetic pesticide application.

It must be noted that there is often heavy social pressure to mow one's lawn regularly. Not merely not keeping up with the Joneses, an unmowed lawn is seen as a first sign of blight (urban).

1 – Safety and preparation 10 minutes

The two main issues with the popular gasoline mower are air pollution and safety. Studies have shown that such a mower emits the same amount of pollution (emissions other than carbon dioxide) in one hour as driving a car for 650 miles. This is largely due to the lack of any real emissions equipment on most lawn mowers; cars have had the benefits of the catalytic converter, fuel injection, and other emissions equipment for decades, while most mowers have little more than a simple muffler and carburetor. Their single-cylinder engines also need to run with a richer fuel-air mixture because of the irregular flow through the carburetor, leading to incomplete combustion.

In addition, rotary mowers can also throw out debris with tremendous force. In the US, there are over 80,000 people per year who are hospitalized due to mower accidents. The vast majority of

these injuries could be avoided by wearing footwear while mowing. The American Academy of Pediatrics recommends that children be 12 before they mow.

A further problem that people have with petrol powered lawn mowers, especially those with a 'zip' start pulling cord mechanism is that it is often very difficult and cumbersome to start, especially as the mower starts to age. Proper care of the engine can delay this problem. [1]

2 – Lawns 10 minutes

"Turf grass" and "Lawn and turf grasses" both redirect to here. There are thousands of varieties of lawngrass, each adapted to specific conditions of precipitation, temperature, and sun/shade tolerance. Breeders are constantly creating new and improved varieties of the base list of lawngrass species. The two basic categories are cool season grasses and warm season grasses.

Cool season grasses start growth at 5 °C, and grows at their fastest rate when temperatures are between 10-25 °C (Huxley 1992), in climates that have relatively mild/cool summers, with two periods of rapid growth in the spring and autumn. They retain their color well in extreme cold and typically grow very dense, carpetlike lawns with relatively little thatch.

- bluegrass
- bentgrass
- ryegrasses
- fescues [1]

3 – Mowers 10 minutes

Lawn mower or lawnmower is a piece of equipment that has one or more revolving blades to cut grass or other plants of a lawn at an even length.

Lawn mowers employing a blade that rotates about a vertical axis are known as rotary mowers, while those employing a blade assembly that rotates about a horizontal axis are known as cylinder or reel mowers.

Many different designs have been made, each suited to a particular purpose. The smallest types, pushed by a human, are suitable for small residential lawns and gardens, while larger, self-contained, ride-on mowers are suitable for large lawns, and the largest, multi-gang mowers pulled behind a tractor, are designed for large expanses of grass such as golf courses and municipal parks. [1]

There are four major types of reel mower: push, walk-behind power, ride-on power, and tow-behind gang mowers.

Push mowers have no motor and are used on small lawns. As the mower is pushed along, the wheels drive gears which rapidly spin the reel. Typical cutting widths are 12 to 20 inches.

The walk-behind, power reel mower exists in many variations. The 'greens mower' is used for the precision cutting of golf greens. Unlike the push mower illustrated, these have the roller in front of the reel, the short putting green grass being little affected by this location for the roller. A motor spins the reel at great speed. For residential lawns, the front roller is replaced by small wheels at the sides, and either an electric or an internal combustion engine powers the reel. The operator pushes the mower along. The electric models can be corded or battery powered. Running times for the battery models range from 30 to 75 minutes, and 6 to 24 hours are required to fully recharge the batteries. Most batteries can be recharged several hundred times. Cordless electric reel mowers weigh 30 – 35 pounds.

One type of walk-behind is now largely obsolete. These were powered versions of the push mower and were used for residential lawns. An internal combustion engine sat atop the reel housing and drove the wheels, usually though a belt. The wheels in turn drove the reel, as in the push mower.

Riding power reel mowers can also be divided into two types: the 'triplex' which has three hydraulically driven independent cutting heads and is used for golf greens, and the larger 'fairway' machine that has five or seven hydraulically driven cutting heads. Typically, the cutting reels are ahead of the vehicle's main wheels, so that the grass can be cut before the wheels push the grass over onto the ground.

Gang reel mowers are towed behind a tractor in sets (gangs) of three, five, or seven. They are 'ground-powered' that is, the tires of each cutting unit are geared to drive the reel. Gang mowers are used to mow large areas of turf such as sports fields or parks.

The cutting action of a reel mower can provide a very clean cut to the blades of grass, avoiding tissue damage. The cutting action is often likened to that of scissors; however, it is not necessary for the blades of the spinning reel to contact the horizontal cutting bar. If the gap between the blades is less than the thickness of the grass, a clean cut is made as the spinning blades push the grass past the horizontal cutting bar.Rotary mowers are often powered by internal combustion engines. Such engines can be either two-stroke or four-stroke cycle engines, running on gasoline or other liquid fuels. Internal combustion engines used with lawn mowers normally have only one cylinder. Power generally ranges from two to seven horsepower (1.5 to 5.25 kW). The engines are usually carbureted and require a manual pull crank to start them, although an electric start is becoming a sales feature in some countries. In the past rotary mowers had a manually controlled throttle to increase or decrease engine speed. Newer models usually have a pre-set throttle speed that prevents over-revving and improves engine life.

Rotary mowers powered by electric motors are increasingly popular. Usually, these mowers are moved by manual motive power— the on-board engine or motor only spins the blades. These have the disadvantage of requiring a trailing power cord that limits its range and so these are only useful for relatively small lawns, close to a power socket. There is the obvious hazard with these machines of mowing over the power cable, which stops the mower and may put users at risk of electrocution. Installing a residual-current device (GFCI) on the outlet can reduce the risk of electrocution. Cordless (battery powered) electric lawn mowers are also available for small lawns. Electric rotary mowers weigh 45-50 pounds.

The deck of a rotary mower is typically made of steel. Lighter steel is used on less expensive models, heavier on more expensive, which lasts longer. Other deck materials include aluminum, which doesn't rust and is a staple of higher priced mowers, and hard composite plastic, which doesn't rust and is lighter and less expensive than aluminum. Electric mowers typically have a plastic deck.

Rotary mowers typically have an opening in the side or rear of the housing where the cut grass is expelled. Some have a grass catcher attachment at the opening to bag the grass clippings. Special mulching blades are available for rotary mowers. The blade is designed to keep the clippings circulating underneath the mower until the clippings are chopped quite small. Other designs have twin blades to mulch the clippings to small pieces. This avoids the need for bagging the clippings or raking the clippings. Not only does this save labor, as no organics are removed from the lawn, less fertilizer is needed. Mower manufacturers market their mowers as side discharge, 2-in-1, meaning bagging and mulching or side discharging and mulching, and 3-in-1, meaning bagging, mulching, and side discharge. Most 2 in 1 bagging and mulching mowers require a separate attachment to discharge grass onto the lawn. Some side discharge mower manufacturers also sell separate "mulching plates" that will cover the opening on the side discharge mower and, in combination with the proper blades, will convert the mower to a mulching mower. These conversions are impractical when compared with 2 or 3-in-1 mowers which can be converted in the field in seconds. There are two types of bagging mowers. A rear bag mower features an opening on the back of the mower through which the grass is expelled into the bag. Hi-vac mowers have a tunnel that extends from the side discharge to the bag. Hi-vac is also the type of grass collection used on riding lawn mowers and lawn tractors and is considered more efficient. Bag mowers are limited to smaller yards unless the operator wants to empty the bag several times during cutting. Mulching and bagging mowers are not well suited to long grass or thick weeds. According to Consumer Reports, despite all of the new grass collecting/mulching technology, most Americans continue to use side-discharge when mowing.

A dead man's switch is required in some places so that the operator must hold a switch to keep the engine running. Typically, this is an extra bar that is held against the handle. Should the operator lose control of, or contact with, the lawn mower and release the bar, either the engine is turned off or the blade is disconnected by disengaging a clutch. Most higher priced mowers (and many at lower prices) have a manually activated blade clutch that allows the operator to stop the blade rotating without turning off the motor.

Rotary mowers come in three price ranges. Low priced mowers use older technology, smaller motors, and lighter steel decks. These mowers are targeted at the residential market and typically price is the most important selling point. These mowers are sold through large discount and home improvement stores, range between $100-$400 and have a typical service life of 7-10 years. Higher priced mowers are also primarily targeted at residential customers. These mowers have more features and often have heavier steel, composite plastic or aluminum decks. Most of these mowers are sold through independent dealers who also service the equipment and cost between $400 and $1000. These mowers will last as much as twenty years given regular maintenance. Commercial grade mowers are the most expensive rotary mowers. They are "targeted" at grounds maintenance companies and other professionals, but are commonly sold to home owners as well. These mowers feature the latest technology and include features like disk

drive, oil filters, and very heavy steel and, more often, aluminum decks. These mowers are sold through independent dealers who service the product and have a service life far beyond twenty years given regular maintenance. A commercial grade mower typically costs well over $1000.

A popular alternative for larger lawns is the riding (or *ride-on*) mower. The operator is provided with a seat and controls on the mower and literally 'rides' on the machine. Most use the horizontal rotating blade system, though usually with multiple blades.

A common form of ride-on mower is the lawn tractor. These are usually designed to resemble a small agricultural tractor, with the cutting deck mounted amidships between the front and rear axles.

The drives for these mowers are in several categories. The most common transmission for tractors is a manual transmission. The second most common transmssion type is a form of continuously variable transmission called the hydrostatic transmission. These transmissions take several forms, from pumps driving separate motors, which may incorporate a gear reduction, to fully integrated units containing a pump, motor and gear reduction. Hydrostatic transmissions are more expensive than mechanical transmissions but they are easier to use and can transmit greater torque to the wheels as compared to a typical mechanical transmission. The least common drive type, and the most expensive, is electric.

There have been a number of attempts to replace hydrostatic transmissions with a lower cost alternative, but these attempts, which include variable belt types (e.g., MTD's Auto Drive) and toroidal, have various performance or perception problems that has caused their market life to be short or their market penetration to be limited.

Hover mowers are powered rotary push mowers that use a turbine above the spinning blades to drive air downwards, thereby creating an air cushion that lifts the mower off the ground like a hovercraft. The operator can then easily move the mower as it floats over the grass. Hover mowers are necessarily light in order to achieve the air cushion and typically have plastic bodies with an electric motor, although small petrol-engine versions are also available. A different style of movement is often employed with hover mowers whereby operators swing the mower in an arc around themselves because there are no wheels touching the ground to impede movement in sideways directions.

Hover mowers can also be applied to very long grass and even light scrub, since their lightness permits most operators to lift the mower up and then let it sink slowly down while the blades progressively chop up the vegetation. The lifting action is made even easier when the mower is swung around with the handle held against the operator's mid-body to provide leverage. Robotic mowers

Robotic lawn mowers represented the second largest category of household autonomous robots used by the end of 2005. A typical robotic lawn mower requires the user to set up a border wire around the lawn that defines the area to be mowed. The robot uses this wire to trim and in some cases to locate a recharging dock. Robotic mowers are capable of maintaining up to 5 acres of

grass. Electricity usage varies from about 100 watts (comparable to a light bulb) for 1/2 acre to 500 watts (comparable to a refrigerator) to maintain 5 acres.

Robotic lawn mowers are increasingly sophisticated, are self-docking and contain rain sensors nearly eliminating human interaction for mowing grass. Professional mowers

Professional grass-cutting equipment (used by large establishments such as universities, sports stadiums or local authorities and suchlike) usually take the form of much larger, dedicated, ride-on platforms or attachments that can be mounted on, or behind, a standard tractor unit (a "gang-mower"). Either type may use rotating-blade or cylindrical-blade type cutters, although good-quality mowed surfaces demand the latter. Wide-area mowers (WAMs) are commercial grade mowers which have decks extended to either side, many to 12 feet. These extensions can be lowered for large area mowing or raised to decrease the mower's width and allow for easy transport on city roads or trailers

4 - Trimmers 10 minutes

String trimmers - Lightweight cordless string trimmer and edger for small lawns and quick tasks Trimmer covers an 8-inch cutting span; automatic lock function prevents accidental start up 12-volt rechargeable battery powers a 1.8-amp motor to provide 8500 rpm power Minimal assembly required; charger mounts on walls for convenient storage[2]

Edgers - An edger, also known as a lawn edger or stick edger, is a lawn-care tool used to cleanly separate a lawn from a walkway or other paved surface, such as a concrete sidewalk or asphalt path. Edgers may be manual or automated, typically employing a small two-stroke gasoline motor or an electric motor. Use of an edger defines a clear separation between the lawn and the walkway, imparting a finished appearance that is neater than can be achieved by merely mowing over the border of the lawn and walkway (which frequently permits tufts of low-growing grass to hang over onto the walkway, resulting in an irregular or ragged appearance).

In operation, a manual edger usually includes a broad hemispherical blade attached to an elongated handle, which the operator uses to drive the blade into the turf directly alongside the hard surface. In addition, the blade may have a flat top to allow the operator to step on the blade, driving it deep into the lawn and turf in order to clear a space between the lawn and the hard surface. [1]

5 – Clean–up

Grasscycling refers to leaving grass clippings on the lawn when mowing. The term is a portmanteau word combining "grass" and "recycling", and had come into use by at least 1990[1] as part of the push to reduce the huge quantities of clippings going into landfills, up to half of some cities' summertime waste flow, as 1,000 square feet (93 m^2) of lawn can produce 200 to 500 pounds (90 to 225 kg) of clippings a year.

Because grass consists largely of water (80% or more), contains little lignin, and has high nitrogen content, grass clippings easily break down and return to the soil within one to two

weeks, acting primarily as a fertilizer supplement and, to a much smaller degree, a mulch. Grasscycling can provide 15 to 20% or more of a lawn's yearly nitrogen requirements. Proponents also note that grasscycling reduces the use of plastic bags for collecting yard waste and reduces trips to the curb or landfill to haul waste.

Optimal grasscycle techniques include:

- Cutting no more than 1/3 the length of the grass
- Cutting when the grass is dry to the touch
- Cutting when the height is between 3 and 4 inches (7 to 10 cm)
- Ensuring that the mower blade is sharp

Although a mulching mower can make grass clippings smaller, one is not necessary for grasscycling. [1]

Use a light rake or brush to keep the lawn free of leaves and debris. Specialist leaf sweepers and lawn vacuums are available for hire from local garden centers or Do-It-Yourself stores for larger lawns; although in winter it is better to keep off with heavier machines. Service or replace your mower if necessary ready for the next growing season. As always make sure that the blades are in good condition and are sharp. [3]

B - Conclusion 5 minutes

Questions of the participants to determine successful completion of the course.

1 Wikipedia, 12/27/2007

2 Black and Decker website, 12/27/2007

3 Rolawn website, 12/31/2007

Method of Attendance verification: Each participant will be asked to present an identification to the course monitor who will photocopy the information for the records of the course provider and maintain a listing of each participant excluding those who do not successfully complete the training.

Method of student record maintenance: Student records will be maintained by hard copy of the attendance rosters. The same data will also be maintained on a database. An electronic copy of the data is backed up off-premise. In the event of a fire or nuclear holocaust maintenance of the records is part of the sponsoring organization disaster plan.

List of other states that have approved the course and the credits granted by each state: AL-no, AK-2, AR-1, CT-no, TX-no, MD-no, UT-1

Instructor: Wesley Weedwacker, PhD., SSN 555-55-5555, curriculum vitae attached